



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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OFFICE OF
SOLID WASTE AND EMERGENCY RESPONSE

OCT 22 1990

ENVIRONMENTAL PROTECTION

Mr. Byron Bradd
General Manager
ETICAM
2095 Newlands Drive East
P.O. Box 1075
Fernley, Nevada 89048

Dear Mr. Bradd:

I am writing to inform you of our review of your sampling and analysis plan (#D0802) that pertains to a delisting petition which, when submitted, will request the exclusion of salt residues stored in 3,000 drums, and salt residues and wastewater currently being generated from the treatment of metal finishing, electronics, and electroplating wastes at your Fernley, Nevada facility. These wastes are presently classified as EPA Hazardous Waste Nos. F006-F012 and F019.

This letter only addresses issues pertaining directly to the sampling and analysis of the petitioned wastes. Delisting petitions must satisfy all information requirements outlined under 40 CFR §§260.20 and 260.22. Additional information on preparing a delisting petition can be found in the EPA document "Petitions to Delist Hazardous Waste: A Guidance Manual" (EPA/530-SW-85-003, April 1985). In particular, Section 4 of this manual outlines specific information requirements for multiple waste treatment facilities.

If granted, the scope of an exclusion would be limited to the specific wastes that you are able to characterize in your delisting demonstration. For example, if you submit data for wastes listed as F006-F012 and F019, but do not submit data for wastes listed as K061 and K062, the exclusion would apply to the F-listed wastes only. Further, if you later accept wastes outside of the scope of the exclusion or significantly increase the volume of wastes treated (as indicated on page 5 of your plan), then your exclusion would be considered void due to these changes. However, please recognize that you would have the option of submitting a new petition to amend your exclusion (if granted) to account for any "new" wastes or process changes.

Please realize that because of the variable nature of the facility's influent wastes, our decision to grant an exclusion for the petitioned wastes would most likely be conditioned on continued sampling and analyses regardless of the sampling strategy you choose to pursue. Sampling and analytical requirements would be based on the evaluation of data submitted in support of your petition. For wastes such as yours, we typically require that each batch of waste generated be analyzed, prior to disposal, for at least the leachable concentrations of the eight metals listed in 40 CFR §261.24, nickel, cyanide and other hazardous constituents (e.g., those listed in 40 CFR Part 261, Appendix VIII) that are potentially present in the excluded wastes.

We believe that samples collected under the proposed sampling and analysis plan will not adequately represent the range of constituents likely to be present in each waste; however, we also recognize that the major challenge in collecting samples is the characterization of the variability of these wastes. The remainder of this letter, therefore, outlines important process information which must be submitted with your petition and presents our comments on your proposed sampling approach and the adequacy of your choice of analytical constituents for testing.

Additional Process Information

Your formal petition must provide information on the processes generating the petitioned wastes. With this information, we can determine the likelihood of hazardous constituents being present in the petitioned wastes and assess whether your sampling plan adequately characterizes the petitioned wastes. Specifically, you should provide the following information:

- o Describe procedures for prescreening client wastes and identify what types of information clients are required to submit
- o Identify, perhaps by EPA Hazardous Waste No., industry sector, or client, the types and approximate quantities of waste treated since ETICAM began receiving waste in April 1987
- o Describe and provide a schematic of each step of each treatment process contributing to the generated wastes. Include a step-by-step description of each process step, reactions occurring, and material inputs and outputs in your descriptions and schematics. You also need to identify any

reaction intermediates and by-products formed during the processes

- o Discuss what contaminants would affect process efficiency (e.g., the ability of the reactors or ion-exchange columns to remove metals), the effect of high influent constituent levels on the petitioned wastes, how the processes are monitored, and other factors which could affect the composition of the petitioned wastes
- o Describe in detail how the constituents of concern for the listed wastes, and characteristics for the characteristic wastes, are removed from or immobilized in the petitioned wastes
- o Discuss how your treatment system is capable of removing hazardous organic constituents from the petitioned wastes. Wastes from the electroplating, metal finishing, and electronics industries typically and frequently contain degreasing solvents and/or petroleum-derived oils. Alternatively, you may discuss how hazardous organic constituents will not be present in the petitioned wastes due to generator specific information and influent waste monitoring
- o Describe in detail the ability of the treated effluent to consistently achieve constituent levels provided on page 5 of your sampling plan. This would include process control and monitoring information, efficiencies of the second precipitation step, ion-exchange efficiency, and ion-exchange resin lifetime
- o Provide estimates of the average and maximum monthly and annual volumes of the petitioned wastes
- o Identify whether the salt residues have ever been disposed of on site in a land-based RCRA waste management unit. If so, you must also submit ground-water monitoring data.

Comments on Sampling Approach

For delisting purposes, the full range of variability of the petitioned wastes must be represented by your sampling plan. Your ability to characterize the homogeneous or heterogeneous nature of the wastes should dictate the number of samples that are adequate for collection. Based on your knowledge of the types of waste treated and treatment operations at your facility, you may be able to show that the treatment of one influent waste would represent a worst-case condition for several other wastes. Similarly, if the salt residue stored on-site in drums represents

the variability or uniformity of the salt residues currently being generated, you may be able to rely on some of the data from the drummed waste to characterize the waste currently being generated. The appropriate number of samples should be determined prior to the initiation of sampling based on process information and anticipated variability. However, you should collect additional samples if preliminary analytical results indicate that the petitioned wastes are highly variable.

At a minimum, the sampling plan must account for the different types of waste received at your facility (*i.e.*, waste generated from all listed and characteristic hazardous waste codes permitted for receipt). In addition, your sampling and analysis strategy should account for the following factors affecting influent and process variability:

- o Additional homogeneity of the untreated waste due to mixing during transport or mixing at the facility, at any stage of treatment. For example, you state that each waste is treated batchwise up to the precipitation step, while effluent is mixed prior to residue generation
- o Influent variability due to a changing client and waste influent base
- o Extreme waste levels of hazardous constituents expected to be treated at the facility, or the identification and sampling of petitioned waste generated from otherwise "difficult" wastes
- o The impact of all operating cycles on the petitioned wastes (*e.g.*, batch cycles versus continuous operation; start-up, shut-down, and other process transients; and maintenance and cleaning operations) on a daily, monthly, or other periodic basis.

Regardless of the number of samples chosen for collection, the following guidelines should be used in collecting samples:

- o To the extent possible, for all waste samples collected, you should record the types and volumes of wastes being treated during the sample collection period. Any major variability in operations at the time of the sampling event also should be noted. Available records such as waste discharge logs should be submitted to demonstrate that samples collected account for any influent or process variability
- o We recommend that your sampling procedures involve the collection of no more than five-to-ten grab samples per composite. In addition, samples to be analyzed for volatile organic compounds should not be composited in the field due

to the potential loss of volatile compounds. We recommend that you either analyze grab samples separately for volatiles, or carefully composite the grab samples in the laboratory prior to analysis.

Furthermore, although your sampling plan includes the sampling of "non-petitioned" wastes to support your claim that the salt residues and treated effluent are not hazardous, we typically do not require this kind of demonstration. Rather, we prefer that the sampling and analysis efforts focus on the characterization of the petitioned waste. If upon review of the analysis data, you determine that hazardous constituents are present at levels of concern in the petitioned wastes, additional sampling of the non-petitioned wastes may be useful to determine the source of the hazardous constituents.

Finally, you may wish to analyze a number of representative samples of each waste prior to committing resources to a full characterization of the petitioned wastes. We would be glad to evaluate this more limited data prior to your submission of a formal petition. If preliminary analytical results indicate that hazardous constituents are present at significant levels, you may be able to modify the treatment process to reduce concentrations prior to your submittal of a formal petition.

We believe that a sampling plan demonstrating that your facility is successfully capable of treating most influent wastes expected to be received would be appropriate. This is similar to the type of program you have proposed; however, important differences include the duration of sampling and sampling frequency. Specific comments on the three petitioned wastes are discussed, in turn, below.

Salt Residues Currently Being Generated

We do not believe that your sampling plan (i.e., the testing of eight composite samples of the salt residue over a 2-month period) adequately characterizes the constituent variability that may occur in the salt residue. Specifically, you do not justify why two months is a sufficient time period to characterize all influent wastes and you fail to discuss why a daily composite sample will be representative of a week of waste processing.

Your petition states that two months would be a sufficient period of time to sample the salt residues because ETICAM's generating records historically indicate that, over a two-month period, the full variety of wastes accepted are received for treatment. However, based on conversations that our contractor, John Vierow, had with Francine Gordon of Jacobs Engineering, we understand that a specific generator may deliver a waste for treatment less frequently than every two months. Thus, it is

important for you to justify in your petition that the samples collected represent the full range of wastes treated.

In addition, we recommend a more frequent sampling schedule than the proposed schedule of one composite sample per week. Each batch of salt residue generated from each batch of treated effluent should be accounted for in the sampling plan. For example, if you treat one to two effluent batches daily, you could collect a grab sample of each batch of generated salt residue and composite every three days (*i.e.*, the composite sample would represent three to six effluent batches). If you treat more batches each day, or operate the treatment system on a continuous rather than batch basis, then a sampling plan to account for this variation would be required. In all cases, sampling frequency should be adjusted depending on the treatment time for each batch.

Treated Effluent

You have proposed to sample the treated effluent at sampling point #3 on your process flow diagram. We do not believe that this is an appropriate sampling point for your delisting demonstration. Your proposed sampling point lies upstream of evaporators and crystallizers and, thus, does not characterize the waste that will be disposed and impact the environment. If you wish to submit a petition for the treated effluent, we recommend that sampling be performed following all treatment (*i.e.*, at the sewer discharge) so that the samples collected represent the waste in its "as disposed" form.

In addition, because our decision to grant an exclusion for the effluent would most likely be conditioned on continued sampling and analysis, you would need to be able to hold each batch of effluent for disposal prior to analysis, and subsequently manage each batch as hazardous or non-hazardous depending on the results of analyses. Such a strategy would be impractical, if the effluent identified by sampling point #3 were excluded, for two reasons: (1) wastewater is internally recycled prior to the point of delisting, and (2) you presently have no storage capacity for the wastewater prior to further treatment. Such a strategy could be more easily implemented at the sewer discharge, if you desire to petition for an exclusion of the wastewater at this point.

Therefore, we are not presenting further comments on your proposed treated effluent sampling program. Rather, we recommend you consider whether it is practical for you to pursue a delisting of the wastewater at the sewer discharge. Should you desire to change the effluent sampling point to the sewer discharge, we recommend sampling at the same frequency for the same duration as your salt residue sampling program.

Drum Sampling

Our primary concern regarding the drum sampling is that the proposed number of samples may not be adequate to describe the variations present in the stored waste. The delisting program does not typically rely on the use of statistical methods to determine the number of samples necessary to characterize a petitioned waste. Rather, we evaluate whether a waste has been sufficiently characterized on the basis of information regarding the potential variability of the petitioned waste. Because it is likely that the drummed waste represents a wide variety of influent wastes, generators, and operating conditions, we do not believe that random sampling is an adequate sampling strategy. However, based on additional, historic information, you may be able to adequately characterize, and thus adequately sample, some of the drummed waste. A more representative sampling plan could result by regrouping the 3,000 waste drums into different lots according to waste type, if such information is available. You could then collect full-depth core samples (a minimum of four) from each group of drums to characterize that type of waste. In your petition, you must justify why the collected samples are representative of waste variability, including "worst-case" wastes or wastes generated during times when waste treatment processes were different than those currently used.

Because of the extensive and costly analyses of the waste in these drums, you may wish to investigate disposal alternatives and simply pursue a delisting of the salt residues currently being generated.

Analytical Parameters Necessary to Characterize the Waste

In addition, your formal petition, once submitted, should include the following analytical information for each effluent and salt residue sample collected. Please note that Total Organic Carbon (TOC) analysis is not required. Analytical results should be reported on a wet weight basis (not dry weight basis), where appropriate.

- o Total oil and grease content
- o Total constituent concentrations of all the TC metals, nickel, cyanide, sulfide, and any hazardous constituents that are potentially present in the wastes
- o Leachable concentrations of all the TC metals, nickel, antimony, and cyanide. Use distilled water in place of the acetate buffer in the cyanide extraction. For waste samples that contain less than one percent oil and grease, use the

Toxicity Characteristic Leaching Procedure (TCLP, SW-846 Method 1311, see the TC rule in 55 FR 11798, March 23, 1990). For waste samples that contain greater than one percent oil and grease, use the Oily Waste Extraction Procedure (OWEP, SW-846 Method 1330) and substitute the TCLP for the extraction procedure in Step 7.9 of the OWEP. We plan to continue to require the OWEP for delisting demonstrations because the TCLP currently has no special provisions for oily wastes

In all cases, the TCLP should be used to determine the leaching potential of hazardous organic constituents likely to be present in the wastes. Please note that for liquid wastes, the leachable concentration of a constituent is equivalent to the total concentration of that constituent

- o Total concentrations of reactive sulfide and reactive cyanide, if total sulfide and total cyanide levels exceed 500 and 250 ppm, respectively
- o Total constituent and leachability analyses of the wastes for fluoride. Fluoride has been identified to be present at significant levels in your treated effluent, and thus is expected to be present in the salt residue. We recommend that you use Method 340 from "Methods for Chemical Analysis of Water and Waste" or Method 413 from "Standard Methods for the Examination of Water and Wastewater" for analysis of total and leachable levels of fluoride
- o Analytical data demonstrating that the wastes do not exhibit the characteristics of ignitability, corrosivity, or reactivity. In lieu of testing for a characteristic, you may provide an explanation as to why the wastes do not exhibit the characteristic
- o Total constituent and leachability analyses of the wastes for the constituents listed on 40 CFR §261, Appendix VIII, acetone, ethyl benzene, isophorone, 4-methyl-2-pentanone, styrene, and xylene (total) that may potentially be present in the wastes

We recognize that the Appendix VIII list presents a number of analytical problems for some constituents. For analytical testing purposes, you must analyze the samples for those compounds which can be accurately quantitated using appropriate methods from SW-846. It should be noted that SW-846 methods exist for all constituents listed on 40 CFR Part 264, Appendix IX.

You may present arguments demonstrating that particular constituents cannot be present because they are not used at

electroplating, metal finishing, or electronics facilities, have never been detected in any of the influent waste, are not added during the treatment process, or could not be formed in the treatment process. We agree that pesticides are unlikely to be present in the petitioned wastes. Therefore, no analyses for pesticides are needed. In addition, analyses for polychlorinated biphenyls (PCBs), polychlorinated dibenzo-p-dioxins (PCDDs), and polychlorinated dibenzofurans (PCDFs) are not needed.

Since your facility receives such a wide variety of wastes from numerous clients, we believe it is likely that all other 40 CFR §261, Appendix VIII constituents may be present in the petitioned waste. Based on our experience with petitions similar to yours, where residues are generated from the treatment of multiple wastes from different clients, we believe that it is necessary to characterize the presence of hazardous organic constituents in each petitioned waste. Therefore, we do not believe that you should limit the analysis for hazardous organic constituents to certain samples.

The samples collected in support of your petition need not be analyzed for dimethylamine borane, fluoboric acid, triethanolamine, ethylene cyanohydrin, and EDTA. However, we are requesting analysis for methanol because of its well-documented health effects.

We believe that you have chosen appropriate methods to analyze your waste for the above Appendix VIII and IX constituents. In particular, the use of SW-846 Method 8240 is appropriate to analyze certain volatile constituents of concern (*i.e.*, the constituents listed in Table 1 of this method, in addition to 1,4-dioxane, ethylene dibromide, and methyl ethyl ketone). Method 8015 is appropriate for the analysis of certain other volatile organic compounds (*i.e.*, acrylamide, methyl ethyl ketone, methyl isobutyl ketone, and paraldehyde). Method 8270 is appropriate to analyze semivolatile constituents of concern (*i.e.*, constituents listed in Table 1 of the method, in addition to pyridine and cresols). The methods you have chosen for the TC toxic metals and nickel are adequate.

You should recognize that US EPA Contract Laboratory Program (CLP) protocol differ from SW-846 protocol. Therefore, please make sure that SW-846 protocol (including QA) is followed during sample analysis. You may, however, still submit the analytical results in CLP format, as indicated in your sampling plan.

Holding Times

The holding times listed in Table 4-1 are, in some cases, inconsistent with the latest SW-846 modifications. The holding time for base/neutral/acid extractable organic compounds is 14 days prior to extraction and 40 days following extraction. The holding time for mercury analysis is 28 days; the holding time for all other metals is 6 months. The holding time for sulfide analysis is 7 days. Analysis for the characteristic of corrosivity should be conducted immediately upon sample receipt. Other holding times given in Table 4-1 are acceptable (*i.e.*, 14 days for cyanide and volatile organic compounds; 28 days for total oil and grease).

Detection Limits

Table 7-1 of your sampling plan lists anticipated detection limits for the waste samples. We recommend that you follow the Practical Quantitation Limits (PQLs) identified in SW-846. If a PQL is not available for a specific constituent, the quantification limits should be as close to established drinking water standards as possible, if a standard has been established.

Quality Assurance/Quality Control (QA/QC)

All sampling and analyses must be accompanied by appropriate QA/QC information. This should include the following information:

- o A detailed description of procedures used to collect, prepare, preserve, and analyze each sample. Include the names and qualifications (a brief resume will suffice) of all personnel involved in the sampling and analysis program. Also provide a list of the names and model numbers of all sample collection, preparation, preservation, and analytical instruments used. Dates of sampling and analyses should be provided. Because acetone is an analyte of potential concern, the analysis of an equipment blank is necessary to determine the extent of contamination. To minimize the effect of contamination, we recommend the use of hexane rather than acetone in your decontamination process.
- o All Quality Control (QC) procedures followed during collection and analyses of samples. This should include, as appropriate: 1) method blank analyses, 2) field QC analyses (*i.e.*, field blanks, equipment blanks and trip blanks), 3) matrix spike analyses, and 4) matrix spike duplicate analyses. Procedures for these and other appropriate QC procedures are fully described in Chapter One of SW-846. Each analytical test method in SW-846 notes laboratory QC procedures appropriate for that particular test method. As

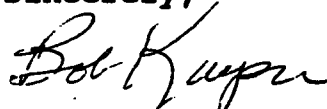
noted previously, SW-846 protocol, not CLP protocol, should be followed.

We believe that your draft sampling plan has been addressed to the fullest extent possible, and we have, therefore, closed the file on draft petition #D0802. If you choose to submit a formal petition in the future, your petition will be assigned a new number and reviewed in chronological order along with all new petitions. Please forward any petition to the following address:

Mr. James Kent
U.S. Environmental Protection Agency
Mail Code (OS-343)
401 M Street, S.W.
Washington, D.C. 20460

If you have any questions concerning this correspondence or clarification of the information required for the submittal of a complete petition, please feel free to call me at (202) 382-2224 or John Vierow, our technical consultant from SAIC, at (703) 734-4318.

Sincerely,



Bob Kayser, Chief
Variances Section

cc: Jim Kent, EPA HQ
Rich Vaille, EPA Region IX
Francine Gordon, Jacobs Engineering
John Vierow, SAIC